

For each of the following problems answer:

- a. Is this an example of direct variation, inverse variation, or neither?
- b. IF it is a direct or inverse variation, then identify the constant of proportionality
- c. IF it is a direct or inverse variation, then write a sentence describing the relationship in the language of direct and inverse variation.

Ex: y is directly proportional to x with a constant of proportionality of 4.

1. The area of a circle is given by the equation $A = \pi r^2$.

- a. _____
- b. $k =$ _____
- c. write the sentence:

2. A cone's height is related to its radius using $h = \frac{132}{\pi r^2}$.

- a. _____
- b. $k =$ _____
- c. write the sentence:

3. A triangle's base is related to its height by the formula $b = \frac{96}{h}$.

- a. _____
- b. $k =$ _____
- c. write the sentence:

4. The cost of operating a GE refrigerator can be related with $C = \frac{h}{3}$, where C is the cost and h is the time in hours

- a. _____
- b. $k =$ _____
- c. write the sentence:

II. Determine whether each table is a direct variation, inverse variation or neither. Now you must determine the value of k AND write the equation that would model the situation.

5.

x	2	3	4	5	6	7
y	8	11	14	17	20	23

- Direct or Inverse Variation?
- $k =$ _____
- symbolic rule (equation): _____

6.

x	-1	1	3	5	7	9
y	-1	1	27	125	243	729

- Direct or Inverse Variation?
- $k =$ _____
- symbolic rule (equation): _____

7.

x	2	4	8	20	40	50
y	50	25	12.5	5	2.5	2

- Direct or Inverse Variation?
- $k =$ _____
- symbolic rule (equation): _____

8.

x	-2	-1	4	5	6	7
y	25	50	-12,5	-10	$-\frac{25}{3}$	$-\frac{50}{7}$

- Direct or Inverse Variation?
- $k =$ _____
- symbolic rule (equation): _____

III. Write the symbolic rule for each of the following.

9. y varies directly as x with a constant of proportionality of 2.

10. z is inversely proportional to w with a constant of proportionality of $\frac{1}{4}$.

11. a is directly proportional to b & c with a constant of proportionality of 0.75.

IV. Answer the following using the given information.

12. In the United States, we usually measure a person's height in inches. In many other countries, they use centimeters to measure a person's height. The height in inches is a function of the height in centimeters according to the rule $I = \frac{c}{2.54}$.

a. Is this function between height in inches and height in centimeters an example of direct variation, inverse variation, or neither? Explain why you chose your answer. Be as specific as possible.

b. What is the constant of proportionality in this relationship?

c. Andrew is 150 cm tall. How many inches tall is he?

d. Victoria is 67 inches tall. Find Victoria's height in centimeters.

e. Express the relationship between height in inches and height in centimeters in a different but equivalent form. (Write symbolically in a different way).

V. Given the following information, find the value of k.

13. If $y = \frac{k}{x}$, and $y=10$ and $x = 3$, then find k. How did you find it? What math work supports your answer?

14. If $y = kx$ and $x = \frac{2}{5}$ and $y = 8$, then find k . How did you find it? What math work supports your answer?
15. If y is directly proportional to x with $x = 12$ and $y = \frac{12}{7}$, then find the value of k . Once you find the value of k , now find what y would equal if $x = 49$.
16. If y is inversely proportional to x with $x = 20$ and $y = 1.4$, then find the value of k . Once you find the value of k , now find what y would equal if $x = 32$.
17. If y varies directly to x with $y = 66$ and $x = 24$, then find the value of k . Once you find the value of k , now find what y would equal if $x = 200$.
18. If y varies inversely to x with $y = \frac{1}{8}$ and $x = 16$, then find the value of k . Once you find the value of k , now find what y would equal if $x = \frac{2}{3}$.